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Provider Profiling: Specialty Referral Patterns of Primary Care

Providers at Dwight David Eisenhower Army Medical Center

by

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13. ABSTRACT *(Maximum 200 words)*

Dwight David Eisenhower Army Medical Center (DDEAMC), Fort Gordon, Georgia, is the United States military's major referral center for the Southeast Region. The Southeast Regional Medical Command (SERMC) and Region 3 of the TRICARE Network consists of approximately 1.02 million beneficiaries in seven states. Facilities within the region have voiced concern about perceived difficulty of access to specialty referral appointments.

The objective of this study was to utilize provider profiling as a tool in order to answer three primary questions. First, is the difficulty in obtaining referral appointments at DDEAMC real or perceived? Secondly, are the referral patterns of the providers a contributory factor in the region's perceived inability to meet the demand for specialty appointments? And third, if the providers' referral patterns are a contributing factor, which provider behaviors need to be modified?

The variables studied were the number of: 1) internal referrals and total visits by Primary Care Provider. 2) internal referrals by specialty. 3) external referrals, by Military Treatment Facility (MTF). 4) external referrals by specialty. 5) network contract referrals, by specialty referred to, and the referring MTF. Among the major findings, the study found that the referral rate of the Primary Care Providers, Department of Primary Care, DDEAMC was 8% compared to the national average of 7.5%. Interns and residents were outliers with referral rates of 11.7% and 13.5%, respectively. Of the 32,182 referral appointments requested by staff physicians, residents, interns, nurse practitioners, and physician assistants during Fiscal Year 1999, slightly less than 2.4% were disengaged.

Data analysis indicates opportunities for improvement in the Department of Primary Care referral rates by addressing the referral practices of residents and interns; therefore, decreasing the number of disengaged patients. Based on observations during data collection, other opportunities for improvement are suggested.

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ABSTRACT

Dwight David Eisenhower Army Medical Center (DDEAMC), Fort Gordon, Georgia, is the United States military's major referral center for the Southeast Region. The Southeast Regional Medical Command (SERMC) and Region 3 of the TRICARE Network consists of approximately 1.02 million beneficiaries in seven states. Facilities within the region have voiced concern about perceived difficulty of access to specialty referral appointments.

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- external referrals, by Military Treatment Facility (MTF).

- external referrals by specialty.

- network contract referrals, by specialty referred to, and the referring MTF.

Among the major findings, the study found that the referral rate of the Primary Care Providers, Department of Primary Care, DDEAMC was 8% compared to the national average of 7.5%. Interns and residents were outliers with referral rates of 11.7% and 13.5%, respectively. Of the 32,182 referral appointments requested by staff physicians, residents, interns, nurse practitioners, and physician assistants during Fiscal Year 1999, slightly less than 2.4% were disengaged.

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INTRODUCTION

Conditions which prompted the study

    Rising health care costs coupled with shrinking budgets are forcing health care executives to evaluate business practices within their organizations with increased scrutiny. In keeping with these practices, the United States Army Medical Department (AMEDD) continually looks for ways to make itself more efficient. The AMEDD, overall umbrella for Army medicine and one of the largest health care organizations in the world, divides its worldwide coverage into regions. The command center of the Southeast Regional Medical Command (SERMC) is co-located with Dwight David Eisenhower Army Medical Center (DDEAMC) at Fort Gordon, Georgia. Included in its major functions are the dual-hatted positions of the SERMC/DDEAMC Commander and Chief-of-Staff who oversee areas of operations within the region. Other operational functions located at SERMC are Information Management, Logistics, Resource Management, and Readiness.

    Dwight D. Eisenhower Army Medical Center is the U.S. military's major referral center for the Southeast Region. The SERMC and Region 3 of the TRICARE Network consists of approximately 1.02 million beneficiaries in seven states (Georgia, Florida, South Carolina, Tennessee, Alabama, Mississippi, and Louisiana). Although, referrals come to DDEAMC from all over the world, the 17 Army, Navy, and Air Force Military Treatment Facilities (MTF) within its region are

DDEAMC's major customers. Facilities within the region have
voiced concern about perceived difficulty of access to specialty
referral appointments. If a referral appointment at DDEAMC is
unavailable within 30-days, patients must be given the option of
being seen by a local TRICARE Network Contract provider.
Because the referral of patients within the Military Health
System (MHS) is more cost effective than referral to network
contract providers, access to regional referral assets must be
optimized. Any referral that is sent to a contract provider is
an additional cost to the SERMC and; therefore, should be
avoided (Dexter, 1999).

Statement of the Problem

        Inability to access specialty care by external customers is
a perceived problem that needs to be addressed. Very little
analysis has been performed on the referral patterns of the
DDEAMC (internal) and regional (external) providers. Specialty
referral data collected at DDEAMC is presently used only as a
quantitative metric to measure how many patients are seen and in
which specialty clinics. There are several metrics collected
but they are not analyzed with a systems approach. As an
example, regional data that is collected on each regional
(external) referral encounter is recorded in a database. This
database contains the patient demographics and clinic data, but
has not been used to evaluate effectiveness of the system.
Understanding the demand on the system is necessary to
adequately plan for specialty referral support. Identifying
providers' specialty referral patterns at DDEAMC's Primary Care

Clinics will provide information about internal demand on the system. Information about internal demand can help identify problem areas, such as, specialties with the heaviest demands and which specialties may need to be evaluated closer due to low utilization. Identification of the specialties, which are unable to meet demand within the 30-day requirement for referrals, will help in planning for both external and internal demand. Therefore, this study will focus first on the specialty referrals through DDEAMC Primary Care providers and secondly, on the regional facility profiles. The information obtained from the analysis should be useful for strategic planning purposes.

The strategic plan for DDEAMC is presently under revision with a focus on data-based goals. One of the goals of the strategic plan is to distribute resources to the most essential missions and services. The information obtained by this study could be utilized to aid in identifying workload that could be recaptured from the contract civilian providers; therefore, lowering cost. The information could also be used to determine which services are over-staffed and which services are in need of additional resources to best meet the mission of the organization.

Literature Review

The ability to control cost has been an issue in health care since early in the development of the healthcare industry. In order to control cost, the specific dynamics of health care needed to be understood (Wennberg & Gittelsohn, 1973). There have been many attempts to understand the dynamics of the

healthcare industry. One of those attempts was to understand
provider patterns through profiling. Provider profiling was
utilized as early as 1969. The state of Vermont implemented a
data system to monitor health care in 251 towns that were
grouped into 13 geographic catchment areas. Price controls in
medical services and insurance were provided by Phase 3 of the
Wage and Stabilization Act of 1970. Professional Standard
Review Organizations were created by a 1972 amendment to the
Social Security Act. All of these actions were aimed directly
at cost control.

The initial focus of provider profiling was on hospital
care because the majority of the financial revenues were
obtained from inpatient resources. According to Wennberg
(1993), small area analysis has at least four characteristics:
1) provides population based rates, 2) focuses on local provider
communities, 3) can provide a comprehensive description of the
health care delivery system, 4) and finally, seeks answers to
policy-relevant questions. Provider profiling has now expanded
to include outpatient care with the migration of patients to the
outpatient setting. Provider profiles have been used to detect
fraud and abuse, to measure productivity, and to determine how
to focus utilization management programs. One of the most
important uses of provider profiling is for provider feedback in
order to help the providers modify their own behavior. The
profile tool must be easily understood, reliable, measurable,
and foster true quality improvement in order to be effective
(Blais, 1994; Kongstvedt, 1997; Bindman, 1999).

Gaining physician's trust in profiling has not been an easy task. There are numerous cases of physicians whose economic and professional well-being have been damaged by the use of provider profiles. Blue Shield for the National Capital Area deselected 3000 physicians from the Federal Blue Shield Program on January 1, 1993. The deselecting action was taken based on information from a physician profiling computer system called ProFile. This action lead many physicians to seek profiling regulatory relief through the Department of Medical Devices of the Food and Drug Administration (Lossing, 1994).

Historically, provider profiling has been based on data drawn from reimbursement claims rather than collection of data on provider performance. Data collection should be tailored to answer the appropriate question under study. Some commercial vendors use as few as 30 patients to create profiles on a provider. It is accepted practice in statistical circles that a sample size $n \geq 30$ needs to be evaluated in order to gain meaningful data. If $n=30$ is utilized consistently to evaluate data there is minimal at best confidence in the results. Despite all the controversy that surrounds provider profiling some providers are open-minded and ready to help with the development of profiling tools. These providers want to ensure that the tools used to evaluate them reflect the variety of their patients, the processes of care, and the outcomes of the providers' decisions (Dans, 1993;Kassirer, 1994; Sackett, & Wennberg, 1997; Wennberg, 1999).

One of the major complaints of providers is that comparisons of individual providers are not fair. Avoiding this controversy can be achieved through case-mix-adjustment. Case-mix-adjustment utilizes statistical adjustment to account for the differences in age, gender, and severity within the population. Failure to apply case-mix-adjustment may lead to overestimates of variation and misidentification of outliers (Rutledge & Osler, 1998). Adjustments to large populations with large numbers of variables remain difficult at best to profile.

The National Committee for Quality Assurance (NCQA) has been testing a standardized set of performance measures, the Health Plan Employer Data and Information Set (HEDIS), since January 1994. Under the current 3.0 version, HEDIS remains unable to adjust for differences in population health risk (Spoeri & Ullman, 1997). Kaiser Foundation of the Mid-Atlantic States used the inconsistencies of HEDIS to motivate their physicians to become involved in provider profiling. Kaiser pointed out that HEDIS was here to stay and unless the providers could get their metrics to make sense they would be judged by the HEDIS standards. Most of the physicians chose to work to improve the profiling process (Eichelberger, 1997).

Current literature suggests that in order for provider profiling to be effective and reliable, it must be focused on specific problems in order to avoid confounding the findings. A recent study, by Grumbach et. al., found that dissatisfaction with access to specialty care was the strongest predictor of

patients' reasons for leaving managed care plans. In the study

of 8,394 patients, 94% agreed that they valued having primary

care physicians to monitor their care and 89% wanted their

primary physicians to participate in referral decisions

(Grumbach, Selby, Damberg, Bindman, Quesenberry, Jr., Truman, &

Uratsu, 1999).

Primary Care Providers (PCP) are the basis of referral to

specialists. This is based on the function of the PCP as the

manager/coordinator of patients' health care. They have an

important role in ensuring that referrals are both appropriate

and timely. The PCP is attempting to provide the best care for

patients but must also be aware of and aid in containment of

referral costs. Donohoe, et al. conducted a study of 222

patients referred from PCPs to specialists, one third of the

patients had been referred unnecessarily, while another one

third failed to keep the referral appointment (Donohoe, Kravitz,

Wheeler, Chandra, Chen, & Humphries, 1999); (Laine & Turner,

1999). In a study, utilizing data from the National Ambulatory

Care Survey and adjusted for patient and physician factors, 7.5%

of HMO patients were referred by their PCPs (Franks & Clancy,

1997).

Purpose of the Study

Utilizing provider profiling as a tool, the purpose of this

study is to answer three primary questions. First, is the

difficulty in obtaining referral appointments at DDEAMC real or

perceived? Secondly, are the referral patterns of the providers

a contributory factor in the region's perceived inability of

DDEAMC to meet the demand for specialty appointments? And third, if the providers' referral patterns are a contributing factor, which provider behaviors need to be modified? In addressing these questions it is necessary to determine what referral demands are placed on DDEAMC and who generates those demands from both an internal and external perspective.

Specifically, this study will utilize provider profiling of specialty referrals as a quantitative exploratory tool in the DDEAMC Primary Care Clinics and within the SERMC in order to:

1) Identify referral patterns of individual providers in DDEAMC's Primary Care Clinics.

2) Identify referral patterns of different provider groups (physicians, nurse practitioners, and physician assistants).

3) Identify external demands on specialty providers, by Military Treatment Facility (MTF).

4) Identify internal demands on specialty providers.

5) Identify the number of patients disengaged to the Network contract providers by specialty and MTF.

6) Supply feedback, based on data, to providers for modification of individual behavior.

The administrative and physician leaders of the SERMC and DDEAMC will be able to utilize this information in order to make decisions related to the obligation of scarce and valuable resources. This could be accomplished by placing more resources in direct support of areas in high demand or decreasing resources to areas that are under-utilized.

METHODS AND PROCEDURES

Based on the literature, it was decided to utilize focused provider profiling to analyze the specialty referral activity of DDEAMC and the SERMC. The providers' specialty referral patterns at DDEAMC were evaluated both individually and by provider groups. The SERMC specialty referral patterns were reviewed by MTF. It was expected that the analysis of the providers' profiles would demonstrate a significant difference in the referral patterns of the providers. The difference expected would either be between provider groups or between the national average and the aggregate average of the DDEAMC providers. Any significant differences could be viewed as an area for exploration in correcting the perceived problem of a lack of referral appointments within the region. The MTFs included in this review are listed in Appendix B.

The limitations associated with this study were primarily related to time and information systems. The study was to be completed within a one-year time frame, in order that conclusions and recommendations could be provided to the study participants prior to anticipated turnovers. Because the study was exploratory, the major focus was to identify possible reasons for the perceived problems in attaining specialty referral appointments. Although several problem areas were identified, there was not sufficient time to thoroughly explore each possible problem.   Even though an enormous amount of data was collected, it resides in several different systems, each

with a different systems manager. Several of the information
management systems utilized were legacy systems that were
separately acquired and designed. The systems utilize different
computer languages and do not share information, frequently
resulting in duplication of data entry and limited access.
Considering the time and collection restrictions, the study
procedure was directed towards specific variables.

The plan for this project was to: 1) identify the data
variables needed to support the purpose of the study, 2)
identify the data systems and the appropriate means of
collecting the data, 3) develop a profile tool or report to
support the study, 4) collect the data, 5) analyze the data, 6)
discuss findings with the providers. Based on the initial
investigation, the following variables were identified:
the number of

- internal referrals and total visits by Primary Care
  Provider.
- internal referrals by specialty.
- external referrals, by MTF.
- external referrals, by specialty.
- network contract referrals, by specialty referred to
  and the referring MTF.

Data collection utilized the Composite Health Care System
(CHCS), the Specialty Referral Database (maintained by the
Department of Managed Care, DDEAMC), Primary Care Department
personnel, Patient Administration personnel, and Quality
Management personnel. The Composite Health Care System (CHCS)

is an integrated hospital information system that supports

multiple outpatient and inpatient functions. Included in these

functions are data storage of patient care and ancillary

services; directing physician orders to all concerned clinical

and administrative services; collecting data from all work

centers; recording results of all patients' tests and

treatments; and allowing authorized users immediate access to

shared data (DDEAMC, 1997).

The data pulled from CHCS included all referrals entered in

the system by Class 1-5 providers (Class 1 = physicians

(physicians refers to staff physicians for the purpose of this

study), residents, interns; Class 2 = nurse practitioners,

physician assistants; Class 3 = registered nurses; Class 4 =

licensed practical nurses; and Class 5 = technicians) for Fiscal

Year 1999. The data were used to determine the internal

Specialty Referrals generated by providers within the Department

of Primary Care, DDEAMC. The external Specialty Referrals were

extracted from the Regional Specialty Referral Database

administered by the Department of Managed Care, which included

patients referred from both DDEAMC and other MTFs from

throughout the region. These data included all Specialty

Referrals that were seen at DDEAMC or disengaged to the TRICARE

Contract Network.

The provider profile tool utilized was reported in a series

of charts with three charts per provider group. These charts

were numbered along the X-axis to represent each provider. The

Y-axis represents the number of referrals, the number of visits,

and the percentage of referrals to visits. This tool was intended to provide a graphic depiction of both the relationships of referrals to visits for each provider and the comparison of those relationships between providers (Appendix C).

The inferential statistical analysis of the provider data included an Analysis of Variance (ANOVA), which determines if there is a significant difference between the means of the selected populations. A Multiple Comparisons between Provider Groups, which compares all possible pairs of group means, is included. And also included is a Regression Analysis of Referrals to Visits, which determines the pattern and strength of the relationship between the variables. Descriptive and Frequency statistics are provided for a comprehensive statistical picture. The level of significance for this study is .05, unless otherwise noted. Also, there is a variable "VPERCEN" that occurs on several tables, this variable is the value of the percentage of referrals to visits.
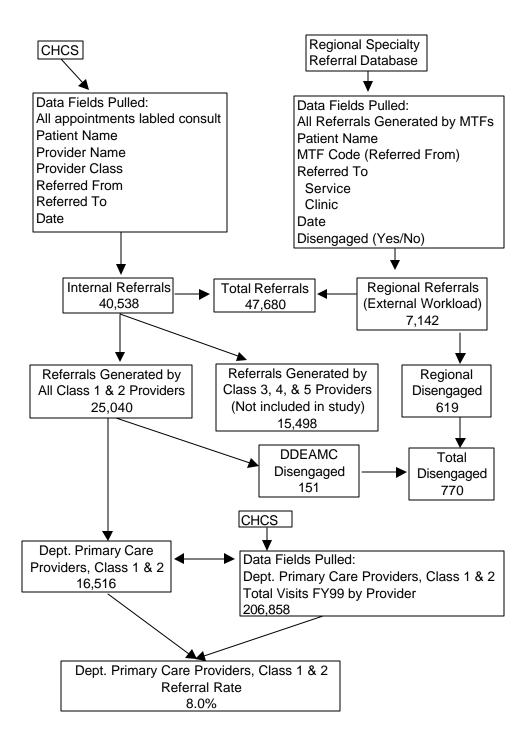
The last step in this study is to discuss the findings with the providers. This will be accomplished by presentation of the study findings to the Department Chief, and Branch Chiefs for the Department of Primary Care, DDEAMC.

Ethical considerations in this project included confidentiality of patients' and providers' names and identifying data. Data allowing identification of patients or

providers were only utilized by persons related to the study for purposes of the study. All presentations and the final paper excluded this data.

RESULTS

The results of this study revealed a total of 47,680 referrals to DDEAMC for Fiscal Year 1999. The outlying SERMC MTFs externally generated 7,142 of the referrals, leaving 40,538 referrals internally generated, by DDEAMC. Further analysis of the data revealed, Class 1 and 2 Providers (physicians, residents, interns, nurse practitioners, and physician assistants) wrote 25,040 of the internal referrals, representing the internally generated workload to Specialty Clinics. The total number of referrals written by the DDEAMC PCPs was 16,516. These 16,516 referrals were generated by a total of 160 Class 1 and 2 providers, who were the focus of the provider profiling, utilized in this study. The diagram provided (Figure 1) shows how the data were collected and organized for this study.

Figure 1. Diagram for Data Collection of Specialty Referral:
Provider Profiling Study.

The top ten utilized clinics are shown in Table 1. This data
was evaluated based on the referrals generated by DDEAMC Primary
Care providers. The analysis shows the top ten utilized clinics
are all DDEAMC internal specialty clinics.

Table 1

Top Ten Referred to Clinics

Referred To Clinic	# of Referrals	Cum %
GI Outpatient	2455	9.80%
Dermatology Outpatient	2072	8.30%
Ophthalmology Outpatient	2013	8.00%
Orthopedics Outpatient	1940	7.70%
Nutritional Outpatient	1332	5.30%
General Surgery Outpatient	1304	5.20%
Cardiology Outpatient	1267	5.10%
ENT Outpatient	1169	4.70%
Gynecology Outpatient	1148	4.60%
Podiatry Outpatient	1057	4.20%

Referral percentages were calculated for each of the providers by dividing the number of referrals by the total visits for that provider. The visits were calculated by adding together appointments that were listed in CHCS as "kept", "walk-in", and "sick-call". This number does not include telephone consults that often result in resolution for the patient, who would otherwise need an appointment.

The results for the five provider groups (physicians, residents, interns, nurse practitioners, and physician assistants) are reported in percentages for both descriptive and inferential statistics. It was expected that the analysis of the providers' profiles would demonstrate a significant difference in the referral patterns of the providers. This hypothesis was accepted based on $p \leq .002$ (Table 2.).

Table 2

Comparison between Groups of Providers in Department of Primary Care, DDEAMC

*Table taken from SPSS.

ANOVA

VPERCEN

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1832.915	4	458.229	4.371	.002
Within Groups	16248.500	155	104.829		
Total	18081.415	159			

However, even though there is a significant difference, further investigation of the groups reveals that the significance actually lies between residents and physicians at $p \leq$ .028 and between residents and physician assistants at $p \leq$ .014. The next comparison which just misses the .05 significance level was between the residents and the nurse practitioners at $p \leq$ .051. (Table 3).

Table 3

Comparisons of Providers by Provider Group Between Groups

Department of Primary Care, DDEAMC

*Table taken from SPSS.

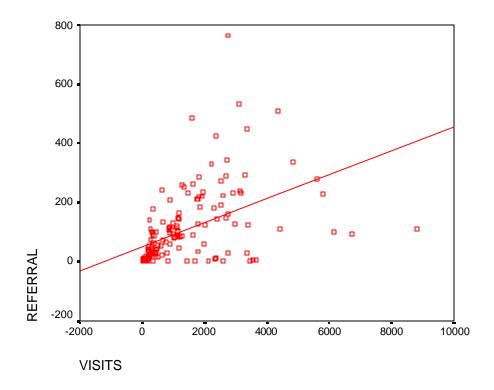**Multiple Comparisons**

Dependent Variable: VPERCEN

Bonferroni

(I) type	(J) type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
intern	intern					
	nur	6.42729	3.23773	.489	-2.79304	15.64763
	phy	4.02867	2.25988	.766	-2.40696	10.46430
	pa	7.31748	3.10817	.198	-1.53389	16.16885
	res	-2.62785	2.58282	1.000	-9.98313	4.72743
nur	intern	-6.42729	3.23773	.489	-15.64763	2.79304
	nur					
	phy	-2.39863	2.93281	1.000	-10.75060	5.95335
	pa	.89019	3.62698	1.000	-9.43865	11.21902
	res	-9.05515	3.18830	.051	-18.13470	2.4406E-02
phy	intern	-4.02867	2.25988	.766	-10.46430	2.40696
	nur	2.39863	2.93281	1.000	-5.95335	10.75060
	phy					
	pa	3.28881	2.78912	1.000	-4.65397	11.23159
	res	-6.65652*	2.18847	.028	-12.88879	-.42426
pa	intern	-7.31748	3.10817	.198	-16.16885	1.53389
	nur	-.89019	3.62698	1.000	-11.21902	9.43865
	phy	-3.28881	2.78912	1.000	-11.23159	4.65397
	pa					
	res	-9.94533*	3.05664	.014	-18.64996	-1.24071
res	intern	2.62785	2.58282	1.000	-4.72743	9.98313
	nur	9.05515	3.18830	.051	-2.44064E-02	18.13470
	phy	6.65652*	2.18847	.028	.42426	12.88879
	pa	9.94533*	3.05664	.014	1.24071	18.64996
	res					

*. The mean difference is significant at the .05 level.

Note: nur = nurse practitioner, phy = staff physician, pa = physician assistant, res = resident

There was an expected positive correlation of referrals and visits at $\underline{r}$=.486 (Figure 2.,Table 4a,b,&c.). The positive correlation is a ratio/percentage increase. This expectation is based on the fact that the national average was 7.5% of visits result in referrals; therefore, whatever the number of visits in this study the referrals should be approximately 7.5% of that number. The 8% finding in this study parallels the national average; therefore, it is expected that as visits increase, referrals will also increase.

Figure 2. Scatter Diagram for number of Referrals and Total Visits.

Table 4a

Regression Analysis of Referrals to Total Visits for Department

of Primary Care Providers, DDEAMC

*Table taken from SPSS.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.486 [a]	.237	.232	1295.41

[a.] Predictors: (Constant), REFERRAL

Table 4b

Regression Analysis of Referrals to Total Visits for

Department of Primary Care Providers, DDEAMC

*Table taken from SPSS.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82182701	1	82182700.86	48.974	.000[a]
	Residual	2.65E+08	158	1678090.444		
	Total	3.47E+08	159			

a. Predictors: (Constant), REFERRAL

b. Dependent Variable: VISITS

Table 4c

Regression Analysis of Referrals to Total Visits for

Department of Primary Care Providers, DDEAMC

*Table taken from SPSS.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	688.617	133.953		5.141	.000
	REFERRAL	5.854	.836	.486	6.998	.000

a. Dependent Variable: VISITS

The population's descriptive statistics are shown in Tables

5 and 6. There is an adequate number of providers for analysis;

however, when divided into groups, the nurse practitioners and

physician assistants drop below the preferred n=30 for sample

size. It would have been ideal to have had at least n=30 for

the nurse practitioners and physician assistants. However, even

though the population size is small for these two groups the

standard deviations are also small (pa/sd=6.9, nur/sd=7.4) in

comparison to the other three groups (phy/sd=8.5, res/sd=12.7,

intern/sd=13.1) (Table 5). The standard deviation for the

groups as a whole was sd=10.7 (Table 6).

Table 5

Descriptive Statistics of Providers by Provider Group

Department of Primary, DDEAMC

Care

*Table taken from SPSS.

Descriptives

VPERCEN

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
intern	30	14.11411	13.05470	2.38345	9.23941	18.98882	.536	50.000
nur	15	7.68682	7.41947	1.91570	3.57805	11.79558	1.411	30.711
phy	65	10.08544	8.50146	1.05448	7.97888	12.19200	.077	50.000
pa	17	6.79663	6.93178	1.68120	3.23264	10.36063	.365	27.555
res	33	16.74197	12.67516	2.20646	12.24755	21.23638	6.013	56.800
Total	160	11.63942	10.66394	.84306	9.97438	13.30446	.077	56.800

Table 6

Frequency Statistics of Providers by Provider Group

Department of Primary Care, DDEAMC

*Table taken from SPSS.

Statistics

		VPERCEN	REFERRAL	VISITS
N	Valid	160	160	160
	Missing	32	32	32
Mean		11.63942	103.23	1292.86
Std. Error of Mean		.84306	9.71	116.84
Median		8.84559	61.00	794.50
Mode		50.000	2	128[a]
Std. Deviation		10.66394	122.82	1477.97
Variance		113.71959	15084.31	2184408.75
Skewness		1.958	2.117	1.989
Std. Error of Skewness		.192	.192	.192
Range		56.723	762	8799
Minimum		.077	1	2
Maximum		56.800	763	8801
Sum		1862.307	16516	206858

[a.] Multiple modes exist. The smallest value is shown

The provider groups are compared by number of referrals, total visits and percent calculated of referrals in Table 7. Again, this comparison demonstrates the disparity among the residents and interns, versus the physicians, nurse practitioners, and physician assistants.

Table 7

Referrals, Total Visits, and Percentages of Referrals by Provider Groups Department of Primary Care, DDEAMC

Provider Group	Referrals	Total Visits	Percent
Intern	710	6046	11.70%
Nurse Practitioner	1078	16856	6.40%
Physician	8414	108581	7.70%
Physician Assistant	3408	53873	6.30%
Resident	2906	21502	13.50%
Totals	16516	206858	8.00%

The final result reported is the number of patients that are disengaged. A disengaged patient is a patient that is referred to the TRICARE Contract Network due to the inability for that patient, whatever the reason, to be seen at DDEAMC. A total of 770 patients were disengaged in Fiscal Year 1999. Surgery patients were disengaged most frequently, 552 of the 770 patients or 72%. The second largest group was medicine patients, 90 of the 770 patients or 12%. These numbers and types of specialty referrals that were disengaged to the TRICARE Contract Network represent workload that might possibly be recaptured.

DISCUSSION

The Southeast Regional Medical Command, as one of six Army Regional Medical Commands, is continually in the process of self-examination. In addressing efficiency efforts, through a systems approach, the command has brought about increased efficiency in several different areas. An example of this increased efficiency is the regional contract's standardization of materials that allows financial savings for regional facilities. One current task to be accomplished within the SERMC is to evaluate alternative business processes that may result in higher productivity levels and cost efficiency, without sacrificing quality within the organization. This study was focused on Specialty Referrals within the SERMC in order to gain an understanding of the workload generated and possible patterns in referral activity that would provide opportunities to improve productivity.

The greatest impact in improved productivity can be realized by addressing referral activities within the Department of Primary Care. The referrals were studied by a capture of data from the Department of Primary Care Providers contained in CHCS. These providers were selected because their area of operation was the major portal of entry for patients into the system. This was supported by an analysis of the data that determined this group of providers accounted for 41% of the internal referral workload and 35% of the total regional referral workload.

Prior to formulation of the study, the Department of Managed Care echoed concerns from supported regional facilities that they were experiencing difficulty in obtaining specialty referral appointments at DDEAMC. As the major referral center for the region DDEAMC processed a total of 47,680 referrals. Of this total, 40,538 were internally generated, 15,498 by Class 3, 4, and 5 providers that would not be disengaged and 25,040 generated by PCPs within the Department of Primary Care, DDEAMC. Regional facilities generated the remaining 7,142 referrals processed by DDEAMC. Of the 47,680 total regional referrals generated, 770 were disengaged. Of the 25,040 internal referrals by PCPs 151 were disengaged. Referrals disengaged from regional MTFs numbered 619 of their total 7,142 referrals generated. By comparison 1.6% of the regions total referrals were disengaged: .31% from DDEAMC PCPs and 1.29% from regional MTFs. Of the 770 total patients disengaged, DDEAMC patients

accounted for 19.6% while regional MTFs patients accounted for 80.4%. Regional MTF patients were disengaged approximately 4 times as frequently as DDEAMC internal referrals (Figure 1).

In analyzing the referral patterns within the Department of Primary Care, a number of important trends were identified. The standard referral rate, according to the National Ambulatory Care Survey, is 7.5%. The aggregate referral rate for Department of Primary Care, DDEAMC was 8.0%. Staff physicians, nurse practitioners, and physician assistants referred patients at a collective rate of 7.2%. Respectively, staff physicians referred at a rate of 7.7%, nurse practitioners at a rate of 6.4%, and physician assistants at 6.3%. Significantly, residents within the Department of Primary Care referred patients at a rate of 13.5%, while interns in the same department had a referral rate of 11.7%. The limitations of the study prevented the collection of data that could provide further insight into more specific referral patterns.

In analyzing the collective provider behavior patterns, modification may be appropriate in two areas. Within DDEAMC, the referral rates of residents and interns are significantly higher than those of staff physicians, nurse practitioners, and physician assistants. The organizational behavior patterns result in the disengagement of regional patients at a rate approximately 4 times as frequently as DDEAMC internal referrals. Data collection prohibits an analysis of possible resident and intern patterns within regional MTFs. Further analysis may indicate similar referral patterns among other

resident and intern populations. Possible modifications of
organizational behavior patterns were not supported by the
variables investigated; however, relevant but not scientific
information obtained during the study warrants additional
consideration.

During the initial phase of this study, while attempting to
answer the three primary questions addressed above, problems
contributing to the disengagement of patients were observed.
Provider templates from DDEAMC and Winn Army Community Hospital,
Fort Stewart, Georgia, were compared to evaluate availability of
appointments. Through interviews with the appointment personnel
at both facilities, it was determined that the greatest
flexibility for scheduling appointments was offered by a six
week rotating schedule. This schedule allows the appointment
personnel to book appointments with a provider six weeks ahead
of time by progressively adding a week at the end of the
schedule to maintain a six-week appointment window. The design
is intended to provide continuous visibility of six weeks of
future appointments. In reality, the providers' schedules are
frequently opened one month (4 weeks) at a time and the previous
month's scheduled appointments may be nearly exhausted before
the next schedule calendar is opened for appointments. This
one-third reduction in available appointments may prematurely
disengage patients to the TRICARE Contract Network in order to
meet access standards of 30 days for an appointment.

In discussing appointment availability and the
disengagement of patients, DDEAMC primary care providers

indicated that inadequate support systems were the primary cause
of production inefficiencies. Many specialty care providers
voiced frustrations with physical plant layout and staffing
support that hampers productive patient flow. This investigator
frequently observed both primary and specialty care providers
locating their next patient in the waiting room, escorting them
to their exam room, setting up rooms and instruments, initiating
routine paperwork, and performing standardized patient teaching
duties. This indicates that procedural processes and staffing
ratios within the organization may be a contributing factor to
the disengagement of patients within the system.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to perform an exploratory
quantitative analysis of specialty referrals within the
Southeast Regional Medical Command. Utilizing provider
profiling as a tool, the study was designed to answer three
primary questions concerning perceived difficulty in obtaining
specialty referral appointments at Dwight D. Eisenhower Army
Medical Center. The data collection was performed as designed
and the variables were subjected to statistical analysis as
described. Several conclusions can be drawn from this analysis
and utilized for strategic planning purposes.

First, was the perceived difficulty in obtaining a referral
appointment at DDEAMC supported by this study? Based on the
data collected and analyzed in this study, 619 or 80.4% of the
770 disengaged patients were referred from external regional
facilities. These patients were disengaged to the TRICARE

Contract Network at a rate four times greater than internal referrals at DDEAMC. The perception was justified by the data.

Second, were the referral patterns of providers a contributory factor in the region's perceived inability to meet the demand for specialty appointments? Internal referrals generated by DDEAMC Class 1 and 2 providers represented 77.8% of the total specialty referrals processed by all regional PCPs during Fiscal Year 1999. The competition for 22.2% of all available specialty referrals at DDEAMC by all other regional facilities most assuredly contributes to a perceived inability to meet the demand for specialty appointments.

Third, if the providers' referral patterns are a contributing factor, which provider behaviors need to be modified? The DDEAMC residents referred at a rate of 13.5%. Interns in the same area referred at a rate of 11.7%. Staff physicians, nurse practitioners, and physician assistants referred at a combined rate of 7.2%, which is 0.3% lower than the national average. When the residents and interns rates were included, the overall specialty referral rate within the DDEAMC Department of Primary Care was 8.0%. This indicates that referral rates improve with experience and the higher referral rates of residents and interns will self adjust over time, but may be modified through teaching coupled with presentation of the provider profiling data analysis.

Based on this analysis, it is recommended that the organization address four issues when developing a strategic plan. 1) Recapture disengaged patients within the system by

modifying referral patterns and correcting scheduling problems.
2) Present the findings of this study (Appendix C) and continue
to use physician profiling as a modification tool, with a
concentration on modifying residents' and interns' referral
patterns. 3) Conduct a study on the impact of staffing ratios,
clinical processes, and physical layout on departmental
productivity. 4) Address the problems of information systems
integration that prevent data from being efficiently accessed.
By addressing these issues in business practice, the
organization will more effectively control internal costs in an
era of shrinking budgets.

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Appendix A

List of Abbreviations

CHCS   Composite Health Care System

DDEAMC   Dwight D. Eisenhower Army Medical Center

HEDIS   Health Plan Employer Data and Information Set

MHS   Military Health System

MTF   Military Treatment Facility

NCQA   National Committee for Quality Assurance

PCP   Primary Care Provider

SERMC   Southeast Regional Medical Command

Appendix B

List of Military Treatment Facilities

(External Referrals)

Atlanta, USAHC, Fort McPherson, GA
Winn Army Hospital, Fort Stewart, GA
Martin Army Hospital, Fort Benning, GA
Moncrief Army Hospital, Fort Jackson, SC
Beaufort Naval Hospital, SC
Charleston Naval Hospital, SC
363rd MEDGRP, Shaw AFB, SC
Robins AFB, GA
Atlanta NAS
BAH, Fort Campbell, KY
U.S. Navy Hospital, Jacksonville, FL
Noble Army Hospital, Fort McClellan, AL
FACH, Redstone Arsenal, AL
LAMC, Fort Rucker, AL
Walter Reed Army MEDCEN, DC
U.S. Navy Hospital, Pensacola, FL
Orlando Naval Hospital, FL
ASAF Regional Hospital, Eglin AFB, FL
325 Medical Group, Tyndall AFB, FL
31 Medical Group, Homestead AFB, FL
56 Medical Group, MacDill, AFB, FL
AFSC Hospital Patrick, Patrick AFB, FL
Gillem, USAHC, Forest Park, GA
Dahlonega, USA Troop MC, GA
Tuttle AHC, HAAF, Savannah, GA
347th Medical Group, Moody AFB, GA
MAH, Fort Leavenwort, KS
Ireland Army Hospital, Fort Knox, KY
Bethesda NNMC
Keesler AFB, MS
Womack Army Hospital, Fort Bragg, NC
Kings Bay, GA
Roosevelt Roads, Naval Hospital, PR
Bayne-Jones AH, Fort Polk, LA

*Referrals were also listed from all 50 states without

association to an MTF.

Appendix C

Physician Referrals

Physician Visits

Physician Referral Rates